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10/747,689	12/30/2003	In-Jae Chung	8733.951.00-US	2899

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EXAMINER	
PARKER, KENNETH	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/747,689	CHUNG ET AL.	
	Examiner	Art Unit	
	Kenneth A. Parker	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,3,5-7,9-14,16 and 18-20 is/are rejected.

7)☒ Claim(s) 2,4,8,15 and 17 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 1-20 are objected to because of the following informalities: In the language "having an applied horizontal electric field", it is not clear what the horizontal field applies to. For examining purposes, it is assumed to mean "the pixel regions having an applied horizontal electric field", and has been examined accordingly. In the language "is different between vertically sub-pixels" appears to be incomplete. It appears to mean "between vertically adjacent subpixels". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 5-7, 9-14, 16, 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta 6226116 in view of Zhong et al 20020093027.

Therefore, as modified above, the reference shows:

The reference shows regarding claim 1. A liquid crystal display panel having an applied horizontal electric field (the pixels have an applied horizontal field) comprising a plurality of elements. It is not explicitly stated that the device is comprised of pixels, wherein each pixel includes sub-pixels of red, green, blue, however the illustrations such as figure 5a which show a color filter separated by a black matrix would be nonsensical if the color filter did not include multiple colors, so one of ordinary skill would recognize this as implying multiple colors which means that a pixel is broken into sub-pixels (the multiple colors are by definition a pixel). Still that the colors are red, green, blue and white is not show (see obviousness analysis below). Wherein a liquid crystal molecule alignment direction of each sub-pixel is different between vertically sub-pixels (here the molecular alignment is different in the driven on state at least, as each electrode pair has a different tilt).

Zhong et al discloses a device with red, green blue and white. Zhong et al does not seem to indicate the benefit of this configuration, but one of ordinary skill would recognize that the red green and blue where used to enable full color (that was the conventional method), and presence of a white pixel would increase the brighntess.

Therefore one of ordinary skill would have found reason, motivation and suggestion to modify the disclosure of Ohta, to employ the subpixel colorings pattern of Zhong for the benefit of enabling full color with higher brightness.

The reference shows regarding claim 3. The liquid crystal display panel according to claim 1, wherein each sub-pixel included in the plurality of pixels has a different liquid crystal alignment direction between horizontally adjacent sub-pixels (as shown in the cover figure).

The reference shows regarding claim 5. The liquid crystal display panel according to claim 1, wherein the liquid crystal molecule alignment direction of the sub-pixels within each of the plurality of pixels is different from each other in the horizontal direction (as shown in the cover figure- they alternate, so this would have to be the case).

The reference shows regarding claim 6. The liquid crystal display panel according to claim 1, wherein the liquid crystal molecule alignment direction of the sub-pixels within each of the plurality of pixels is different from each other in the vertical direction (as shown in the cover figure- they alternate, so this would have to be the case).

The reference shows regarding claim 7. The liquid crystal display panel according to claim 1, further comprising a plurality of gate lines and data lines for defining pixel regions and the sub-pixels included in the plurality of pixels (as shown in the cover figure, but met simply by the by-definition clause).

The reference shows regarding claim 9. The liquid crystal display panel according to claim 7, wherein the gate lines include first and the second gate lines supplying gate signals to each of the plurality of pixels, and wherein the data lines include first and second data lines supplying data signals to each of the plurality of pixels (as shown in the cover figure, but met simply by the by-definition clause. Each sub pixel includes it's own gate and source line as shown).

The reference shows regarding claim 10. The liquid crystal display panel according to claim 9, wherein the plurality of pixels include: a first sub-pixel in a sub-pixel region of the pixel provided by the first data line and the first gate line; a sub-pixel in the sub-pixel region of the pixel defined by the second data line

and the first gate line; a sub-pixel formed in the sub-pixel region of the pixel provided by the first data line and the second gate line; and a sub-pixel formed in the sub-pixel region of the pixel provided by the second data line and the second gate line. (as shown in the cover figure, but met simply by the by-definition clause. Each sub pixel includes it's own gate and source line as shown).

The reference shows regarding claim 11. The liquid crystal display panel according to claim 1, wherein each of the sub-pixels includes a pixel electrode and a common electrode in parallel with the pixel electrode, wherein a horizontal electric field is formed between the pixel electrode and the common electrode (this is as shown between the projections of common line CL and pixel electrode PX).

The reference shows regarding claim 12. The liquid crystal display panel according to claim 11, wherein a liquid crystal alignment of the sub-pixels included in the pixel is determined by any one of slanted directions of the pixel electrode and the common electrode (both slant by theta).

The reference shows regarding claim 13. The liquid crystal display according to claim 12, wherein the slanted directions are defined by a predetermined angle (both slant by theta)..

The reference shows regarding claim 14. The liquid crystal display panel according to claim 1, wherein slanted directions of the pixel electrode and the common electrode of each sub-pixel included in the pixels are different from those of the pixel electrode and the common electrode of the sub-pixels included in vertically adjacent pixels (both slant by theta, but plus or minus alternating)..

The reference shows regarding claim 16. The liquid crystal display panel according to claim 11, wherein slanted directions of the pixel electrode and the common electrode of each sub-pixel included in the pixels are different from those of the pixel electrode and the common electrode of the sub-pixels included in horizontally adjacent pixels (as shown in the cover figure).

The reference shows regarding claim 18. The liquid crystal display panel according to claim 11, wherein slanted directions of the pixel electrode and the common electrode of the sub-pixels within the pixels are each different in a horizontal direction (as shown in the cover figure).

The reference shows regarding claim 19. The liquid crystal display panel according to claim 1 1, wherein slanted directions of the pixel electrode and the

common electrode of the sub-pixels within the pixels are each different in a vertical direction (as shown in the cover figure).

The reference shows regarding claim 20. The liquid crystal display according to claim 11, wherein the pixel electrode includes a horizontal portion in parallel with the an adjacent gate line (the short part in the top near where the pixel PX connects to the transistor).

Allowable Subject Matter

Claims 2, 4, 8, 15, 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

None of the prior art taught or suggested the claimed device with he pixel regions having an applied horizontal electric field, the red, blue, green and white subpixels with the orientation different between vertically sub-pixels where:
Re: 2. each sub-pixel included in the plurality of pixels has the same liquid crystal alignment direction as horizontally adjacent sub-pixel.

Re:4. the liquid crystal molecule alignment direction of each sub-pixel within the plurality of pixels is identical to each other in the horizontal direction.

Re: 8. the data lines are formed to include a bent portion.

Re: 15. slanted directions of the pixel electrode and the common electrode of each sub-pixel included in the pixels are identical to those of the pixel electrode and the common electrode of the sub-pixels included in horizontally adjacent pixels.

Re: 17. slanted directions of the pixel electrode and the common electrode of the sub-pixels within the pixels are each identical in a horizontal direction.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A. Parker whose telephone number is 571-272-2298. The examiner can normally be reached on M-F 10:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kenneth A Parker
Primary Examiner
Art Unit 2871